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ABSTRACT

This guide to attention deficit hyperactivity disorder (ADHD) is organized in three parts which address understanding the problem, getting help, and sustaining hope. A question-and-answer format addresses the following topics: symptoms of ADHD; other conditions which may produce similar symptoms; other disorders which may accompany ADHD; causes of ADHD; the identification and diagnosis of ADHD; educational options for the ADHD student; treatments for the individual with ADHD; the possibility of curing or outgrowing ADHD; hope offered by research; and sources of information and support. Three sample cases are used throughout the guide to illustrate major concepts. Suggested resources include books for children, teens, and adults with attention disorders; books for parents; and resources for teachers and specialists. Also listed are 14 organizational resources. (Contains 31 suggested readings.) (DB)

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National Institute of Mental Health

Decade of the Brain

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Attention Deficit Hyperactivity Disorder

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Message from the National Institute of Mental Health

Research conducted and supported by the National Institute of Mental Health brings hope to millions of people who suffer from mental illness and to their families and friends. In many years of work with animal as well as human subjects, researchers have advanced our understanding of the brain and vastly expanded the capability of mental health professionals to diagnose, treat, and prevent mental and brain disorders.

Now, in the 1990s, which the President and Congress have declared the "Decade of the Brain," we stand at the threshold of a new era in brain and behavioral sciences. Through research, we will learn even more about mental and brain disorders such as depression, bipolar disorder, schizophrenia, panic disorder, obsessive-compulsive disorder, and attention deficit hyperactivity disorder. And we will be able to use this knowledge to develop new therapies that can help more people overcome mental illness.

The National Institute of Mental Health is part of the National Institutes of Health (NIH), the Federal Government's primary agency for biomedical and behavioral research. NIH is a component of the U.S. Department of Health and Human Services.

Attention Deficit Hyperactivity Disorder

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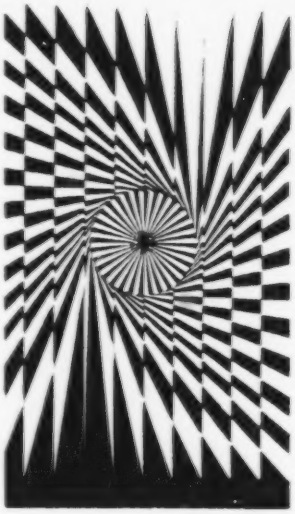
Attention Deficit Hyperactivity Disorder

Imagine living in a fast-moving kaleidoscope, where sounds, images, and thoughts are constantly shifting. Feeling easily bored, yet helpless to keep your mind on tasks you need to complete. Distracted by unimportant sights and sounds, your mind drives you from one thought or activity to the next. Perhaps you are so wrapped up in a collage of thoughts and images that you don't notice when someone speaks to you.



For many people, this is what it's like to have Attention Deficit Hyperactivity Disorder, or ADHD. They may be unable to sit still, plan ahead, finish tasks, or be fully aware of what's going on around them. To their family, classmates, or coworkers, they seem to exist in a whirlwind of disorganized or frenzied activity. Unexpectedly—on some days and in some situations—they seem fine, often leading others to think the person with ADHD can actually control these behaviors. As a result, the disorder can mar the person's relationships with others in addition to disrupting their daily life, consuming energy, and diminishing self-esteem.

ADHD, once called hyperkinesis or minimal brain dysfunction, is one of the most common mental disorders among children. It affects 3 to 5 percent of all children, perhaps as many as 2 million American children. Two to three times more boys than girls are affected. On the average, at least one child in every classroom in the United States needs help for the disorder. ADHD often continues into adolescence and adulthood, and can cause a lifetime of frustrated dreams and emotional pain.

But there is help...and hope. In the last decade, scientists have learned much about the course of the disorder and are now able to identify and treat children, adolescents, and adults who have it. A variety of medications, behavior-changing therapies, and educational options are already available to help people with ADHD focus their attention, build self-esteem, and function in new ways.

In addition, new avenues of research promise to further improve diagnosis and treatment. With so many American children diagnosed as having attention disorder, research on ADHD has become a national priority. During the 1990s—which the President and Congress have declared the "Decade of the Brain"— it is possible that scientists will pinpoint the biological basis of ADHD and learn how to prevent or treat it even more effectively.

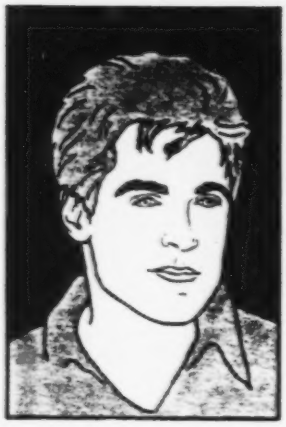
This booklet is provided by the National Institute of Mental Health (NIMH), the Federal agency that supports research nationwide on the brain, mental illnesses, and mental health. Scientists supported by NIMH are dedicated to understanding the workings and interrelationships of the various regions of the brain, and to developing preventive measures and new treatments to overcome brain disorders that handicap people in school, work, and play.

The booklet offers up-to-date information on attention deficit disorders and the role of NIMH-sponsored research in discovering underlying causes and effective treatments. It describes treatment options, strategies for coping, and sources of information and support. You'll find out what it's like to have ADHD from the stories of Mark, Lisa, and Henry. You'll see their early frustrations, their steps toward getting help, and their hopes for the future.

The individuals referred to in this brochure are not real, but their stories are representative of people who show symptoms of ADHD.

Understanding the Problem

Mark

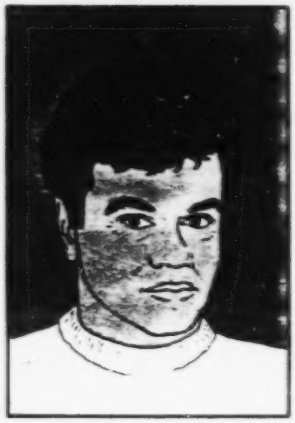


Mark, age 14, has more energy than most boys his age. But then, he's always been overly active. Starting at age 3, he was a human tornado, dashing around and disrupting everything in his path. At home, he darted from one activity to the next, leaving a trail of toys behind him. At meals, he upset dishes and chattered nonstop. He was reckless and impulsive, running into the street with oncoming cars, no matter how many times his mother explained the danger or scolded him. On the playground, he seemed no wilder than the other kids. But his tendency to overreact—like socking playmates simply for bumping into him—had already gotten him into trouble several times. His parents didn't know what to do. Mark's doting grandparents reassured them, "Boys will be boys. Don't worry, he'll grow out of it." But he didn't.

Lisa

At age 17, Lisa still struggles to pay attention and act appropriately. But this has always been hard for her. She still gets embarrassed thinking about that night her parents took her to a restaurant to celebrate her 10th birthday. She had gotten so distracted by the waitress' bright red hair that her father called her name three times before she remembered to order. Then before she could stop herself, she blurted, "Your hair dye looks awful!"

In elementary and junior high school, Lisa was quiet and cooperative but often seemed to be daydreaming. She was smart, yet couldn't improve her grades no matter how hard she tried. Several times, she failed exams. Even though she knew most of the answers, she couldn't keep her mind on the test. Her parents responded to her low grades by taking away privileges and scolding, "You're just lazy. You could get better grades if you only tried." One day, after Lisa had failed yet another exam, the teacher found her sobbing, "What's wrong with me?"



Henry

Although he loves puttering around in his shop, for years Henry has had dozens of unfinished carpentry projects and ideas for new ones he knew he would never complete. His garage was piled so high with wood, he and his wife joked about holding a fire sale.

Every day Henry faced the real frustration of not being able to concentrate long enough to complete a task. He was fired from his job as stock clerk because he lost inventory and carelessly filled out forms. Over the years, afraid that he might be losing his mind, he had seen psychotherapists and tried several medications, but none ever helped him concentrate. He saw the same lack of focus in his young son and worried.

What are the symptoms of ADHD?

The three people you've just met, Mark, Lisa, and Henry, all have a form of ADHD—Attention Deficit Hyperactivity Disorder. ADHD is not like a broken arm, or strep throat. Unlike these two disorders, ADHD does not have clear physical signs that can be seen in an x-ray or a lab test. ADHD can only be identified by looking for certain characteristic behaviors, and as with Mark, Lisa, and Henry, these behaviors vary from person to person. Scientists have not yet identified a single cause behind all the different patterns of behavior—and they may never find just one. Rather, someday scientists may find that ADHD is actually an umbrella term for several slightly different disorders.

At present, ADHD is a diagnosis applied to children and adults who consistently display certain characteristic behaviors over a period of time. The most common behaviors fall into three categories: inattention, hyperactivity, and impulsivity.

Inattention. People who are inattentive have a hard time keeping their mind on any one thing and may get bored with a task after only a few minutes. They may give effortless, automatic attention to activities and things they enjoy. But focusing deliberate, conscious attention to organizing and completing a task or learning something new is difficult.

For example, Lisa found it agonizing to do homework. Often, she forgot to plan ahead by writing down the assignment or bringing home the right books. And when trying to work, every few minutes she found her mind drifting to something else. As a result, she rarely finished and her work was full of errors.

Hyperactivity. People who are hyperactive always seem to be in motion. They can't sit still. Like Mark, they may dash around or talk incessantly. Sitting still through a lesson can be an impossible task. Hyperactive children squirm in their seat or roam around the room. Or they might wiggle their feet, touch everything, or noisily tap their pencil. Hyperactive teens and adults may feel intensely restless. They may be fidgety or, like Henry, they may try to do several things at once, bouncing around from one activity to the next.

Impulsivity. People who are overly impulsive seem unable to curb their immediate reactions or think before they act. As a result, like Lisa, they may blurt out inappropriate comments. Or like Mark, they may run into the street without looking. Their impulsivity may make it hard for them to wait for things they want or to take their turn in games. They may grab a toy from another child or hit when they're upset.

Not everyone who is overly active, inattentive, or impulsive has Attention Deficit Hyperactivity Disorder.

Not everyone who is overly hyperactive, inattentive, or impulsive has an attention disorder. Since most people sometimes blurt out things they didn't mean to say, bounce from one task to another, or become disorganized and forgetful, how can specialists tell if the problem is ADHD?

To assess whether a person has ADHD, specialists consider several critical questions: Are these behaviors excessive, long-term, and pervasive? That is, do they occur more often than in other people the same age? Are they a continuous problem, not just a response to a temporary situation? Do the behaviors occur in several settings or only in one specific place like the playground or the office? The person's pattern of behavior is compared against a set of criteria and characteristics of the disorder. These criteria appear in a diagnostic reference book called the DSM (short for the *Diagnostic and Statistical Manual of Mental Disorders*).

According to the diagnostic manual, there are three patterns of behavior that indicate ADHD. People with ADHD may show several signs of being consistently inattentive. They may have a pattern of being hyperactive and impulsive. Or they may show all three types of behavior.

According to the DSM, signs of **inattention** include:

- becoming easily distracted by irrelevant sights and sounds
- failing to pay attention to details and making careless mistakes
- rarely following instructions carefully and completely
- losing or forgetting things like toys, or pencils, books, and tools needed for a task

Some signs of **hyperactivity** and **impulsivity** are:

- feeling restless, often fidgeting with hands or feet, or squirming
- running, climbing, or leaving a seat, in situations where sitting or quiet behavior is expected
- blurting out answers before hearing the whole question
- having difficulty waiting in line or for a turn

Because everyone shows some of these behaviors at times, the DSM contains very specific guidelines for determining when they indicate ADHD. The behaviors must appear early in life, before age 7, and continue for at least 6 months. In children, they must be more frequent or severe than in others the same age. Above all, the behaviors must create a real handicap in at least two areas of a person's life, such as school, home, work, or social settings. So someone whose work or friendships are not impaired by these behaviors would not be diagnosed with ADHD. Nor would a child who seems overly active at school but functions well elsewhere.

Can any other conditions produce these symptoms?

The fact is, *many* things can produce these behaviors. Anything from chronic fear to mild seizures can make a child seem overactive, quarrelsome, impulsive, or inattentive. For example, a formerly cooperative child who becomes overactive and easily distracted after a parent's death is dealing with an emotional problem, not ADHD. A chronic middle ear infection can also make a child seem distracted and uncooperative. So can living with family members who are physically abusive or addicted to drugs or alcohol. Can you imagine a child trying to focus on a math lesson when his or her safety and well-being are in danger each day? Such children are showing the effects of other problems, not ADHD.

In other children, ADHD-like behaviors may be their response to a defeating classroom situation. Perhaps the child has a learning disability and is not developmentally ready to learn to read and write at the time these are taught. Or maybe the work is too hard or too easy, leaving the child frustrated or bored.

Tyrone and Mimi are two examples of how classroom conditions can elicit behaviors that look like ADHD. For months, Tyrone shouted answers out in class, then became disruptive when the teacher ignored him. He certainly seemed hyperactive and impulsive. Finally, after observing Tyrone in other situations, his teacher realized he just wanted approval for knowing the right answer. She began to seek opportunities to call on him and praise him. Gradually, Tyrone became calmer and more cooperative.

Mimi, a fourth grader, made loud noises during reading group that constantly disrupted the class. One day the teacher realized that the book was too hard for Mimi. Mimi's disruptions stopped when she was placed in a reading group where the books were easier and she could successfully participate in the lesson.

Like Tyrone and Mimi, some children's attention and class participation improve when the class structure and lessons are adjusted a bit to meet their emotional needs, instructional level, or learning style. Although such children need a little help to get on track at school, they probably don't have ADHD.

What can look like ADHD?

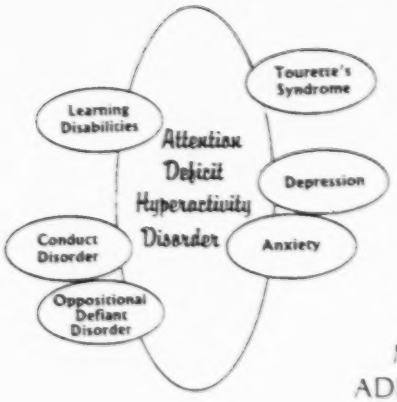
- **Underachievement at school due to a learning disability**
- **Attention lapses caused by petit mal seizures**
- **A middle ear infection that causes an intermittent hearing problem**
- **Disruptive or unresponsive behavior due to anxiety or depression**

It's also important to realize that during certain stages of development, the majority of children that age tend to be inattentive, hyperactive, or impulsive—but do not have ADHD. Preschoolers have lots of energy and run everywhere they go, but this doesn't mean they are hyperactive. And many teenagers go through a phase when they are messy, disorganized, and reject authority. It doesn't mean they will have a lifelong problem controlling their impulses.

ADHD is a serious diagnosis that may require long-term treatment with counseling and medication. So it's important that a doctor first look for and treat any other causes for these behaviors.

Can other disorders accompany ADHD?

One of the difficulties in diagnosing ADHD is that it is often accompanied by other problems. For example, many children with ADHD also have a specific learning disability (LD), which means they have trouble mastering language or certain academic skills, typically reading and math. ADHD is not in itself a specific learning disability. But because it can interfere with concentration and attention, ADHD can make it doubly hard for a child with LD to do well in school.



A very small proportion of people with ADHD have a rare disorder called Tourette's syndrome. People with Tourette's have tics and other movements like eye blinks or facial twitches that they cannot control. Others may grimace, shrug, sniff, or bark out words. Fortunately, these behaviors can be controlled with medication. Researchers at NIMH and elsewhere are involved in evaluating the safety and effectiveness of treatment for people who have both Tourette's syndrome and ADHD.

More serious, nearly half of all children with ADHD—mostly boys—tend to have another condition, called oppositional defiant disorder. Like Mark, who punched playmates for jostling him, these children may overreact or lash out when they feel bad about themselves. They may be stubborn, have outbursts of temper, or act belligerent or defiant. Sometimes this progresses to more serious conduct disorders. Children with this combination of problems are at risk of getting in trouble at school, and even with the police. They may take unsafe risks and

break laws—they may steal, set fires, destroy property, and drive recklessly. It's important that children with these conditions receive help before the behaviors lead to more serious problems.

At some point, many children with ADHD—mostly younger children and boys—experience other emotional disorders. About one-fourth feel anxious. They feel tremendous worry, tension, or uneasiness, even when there's nothing to fear. Because the feelings are scarier, stronger, and more frequent than normal fears, they can affect the child's thinking and behavior. Others experience depression. Depression goes beyond ordinary sadness—people may feel so "down" that they feel hopeless and unable to deal with everyday tasks. Depression can disrupt sleep, appetite, and the ability to think.

Every child who has ADHD should be checked for anxiety and depression.

Because emotional disorders and attention disorders so often go hand in hand, every child who has ADHD should be checked for accompanying anxiety and depression. Anxiety and depression can be treated, and helping children handle such strong, painful feelings will help them cope with and overcome the effects of ADHD.

Of course, not all children with ADHD have an additional disorder. Nor do all people with learning disabilities, Tourette's syndrome, oppositional defiant disorder, conduct disorder, anxiety, or depression have ADHD. But when they do occur together, the combination of problems can seriously complicate a person's life. For this reason, it's important to watch for other disorders in children who have ADHD.

What causes ADHD?

Understandably, one of the first questions parents ask when they learn their child has an attention disorder is *"Why? What went wrong?"*

Health professionals stress that since no one knows what causes ADHD, it doesn't help parents to look backward to search for possible reasons. There are too many possibilities to pin down the cause with certainty. It is far more important for the family to move forward in finding ways to get the right help.

Scientists, however, do need to study causes in an effort to identify better ways to treat, and perhaps some day,

prevent ADHD. They are finding more and more evidence that ADHD does not stem from home environment, but from biological causes. When you think about it, there is no clear relationship between home life and ADHD. Not all children from unstable or dysfunctional homes have ADHD. And not all children with ADHD come from dysfunctional families. Knowing this can remove a huge burden of guilt from parents who might blame themselves for their child's behavior.

Over the last decades, scientists have come up with possible theories about what causes ADHD. Some of these theories have led to dead ends, some to exciting new avenues of investigation.

ADHD is not usually caused by:

- **too much TV**
- **food allergies**
- **excess sugar**
- **poor home life**
- **poor schools**

One disappointing theory was that all attention disorders and learning disabilities were caused by minor head injuries or undetectable damage to the brain, perhaps from early infection or complications at birth. Based on this theory, for many years both disorders were called "minimal brain damage" or "minimal brain dysfunction." Although certain types of head injury can explain some cases of attention disorder, the theory was rejected because it could explain only a very small number of cases. Not everyone with ADHD or LD has a history of head trauma or birth complications.

Another theory was that refined sugar and food additives make children hyperactive and inattentive. As a result, parents were encouraged to stop serving children foods containing artificial flavorings, preservatives, and sugars. However, this theory, too, came under question. In 1982, the National Institutes of Health (NIH), the Federal agency responsible for biomedical research, held a major scientific conference to discuss the issue. After studying the data, the scientists concluded that the restricted diet only seemed to help about 5 percent of children with ADHD, mostly either young children or children with food allergies.

In recent years, as new tools and techniques for studying the brain have been developed, scientists have been able to test more theories about what causes ADHD.

Using one such technique, NIMH scientists demonstrated a link between a person's ability to pay continued attention and the level of activity in the brain. Adult subjects were

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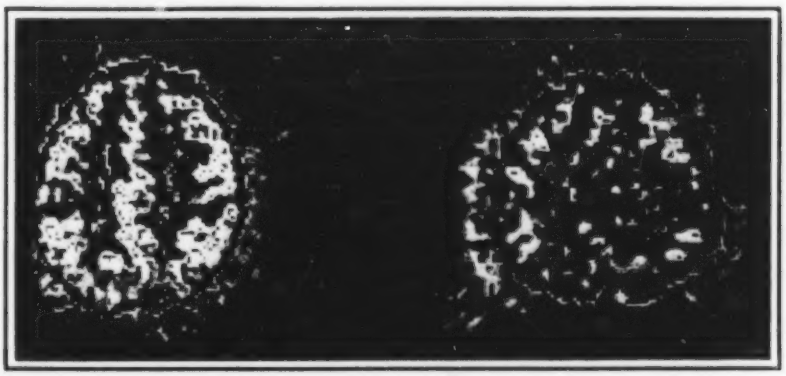
asked to learn a list of words. As they did, scientists used a PET (positron emission tomography) scanner to observe the brain at work. The researchers measured the level of glucose used by the areas of the brain that inhibit impulses and control attention. Glucose is the brain's main source of energy, so measuring how much is used is a good indicator of the brain's activity level. The investigators found important differences between people who have ADHD and those who don't. In people with ADHD, the brain areas that control attention used less glucose, indicating that they were less active. It appears from this research that a lower level of activity in some parts of the brain may cause inattention.



Brain scan images produced by positron emission tomography (PET) show differences between an adult with Attention Deficit Hyperactivity Disorder (right) and an adult free of the disease (left).

The next step will be to research *why* there is less activity in these areas of the brain. Scientists at NIMH hope to compare the use of glucose and the activity level in mild and severe cases of ADHD. They will also try to discover why some medications used to treat ADHD work better than others, and if the more effective medications increase activity in certain parts of the brain.

Researchers are also searching for other differences between those who have and do not have ADHD. Research on how the brain normally develops in the fetus offers some clues about what may disrupt the process. Throughout pregnancy and continuing into the first year of life, the brain is constantly developing. It begins its growth from a few all-purpose cells and evolves into a complex organ made of billions of specialized, interconnected nerve cells. By studying brain development in animals and humans, scientists are gaining a better understanding of how the brain works when the nerve cells are connected.

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correctly and incorrectly. Scientists at NIMH and other research institutions are tracking clues to determine what might prevent nerve cells from forming the proper connections. Some of the factors they are studying include drug use during pregnancy, toxins, and genetics.

Research shows that a mother's use of cigarettes, alcohol, or other drugs during pregnancy may have damaging effects on the unborn child. These substances may be dangerous to the fetus' developing brain. It appears that alcohol and the nicotine in cigarettes may distort developing nerve cells. For example, heavy alcohol use during pregnancy has been linked to fetal alcohol syndrome (FAS), a condition that can lead to low birth weight, intellectual impairment, and certain physical defects. Many children born with FAS show much the same hyperactivity, inattention, and impulsivity as children with ADHD.

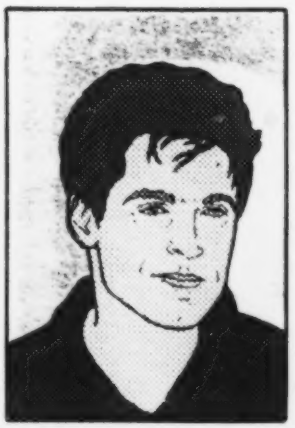
Drugs such as cocaine—including the smokable form known as crack—seem to affect the normal development of brain receptors. These brain cell parts help to transmit incoming signals from our skin, eyes, and ears, and help control our responses to the environment. Current research suggests that drug abuse may harm these receptors. Some scientists believe that such damage may lead to ADHD.

Toxins in the environment may also disrupt brain development or brain processes, which may lead to ADHD. Lead is one such possible toxin. It is found in dust, soil, and flaking paint in areas where leaded gasoline and paint were once used. It is also present in some water pipes. Some animal studies suggest that children exposed to lead may develop symptoms associated with ADHD, but only a few cases have actually been found.

Other research shows that attention disorders tend to run in families, so there are likely to be genetic influences. Children who have ADHD usually have at least one close relative who also has ADHD. And at least one-third of all fathers who had ADHD in their youth bear children who have ADHD. Even more convincing: the majority of identical twins share the trait. At the National Institutes of Health, researchers are also on the trail of a gene that may be involved in transmitting ADHD in a small number of families with a genetic thyroid disorder.

Getting Help

Mark



In third grade, Mark's teacher threw up her hands and said, "Enough!" In one morning, Mark had jumped out of his seat to sharpen his pencil six times, each time accidentally charging into other children's desks and toppling books and papers. He was finally sent to the principal's office when he began kicking a desk he had overturned. In sheer frustration, his teacher called a meeting with his parents and the school psychologist.

But even after they developed a plan for managing Mark's behavior in class, Mark showed little improvement. Finally, after an extensive assessment, they found that Mark had an attention deficit that included hyperactivity. He was put on a medication called Ritalin to control the hyperactivity during school hours. Although Ritalin failed to help, another drug called Dexedrine did. With a psychologist's help, his parents learned to reward desirable behaviors, and to have Mark take "time out" when he became too disruptive. Soon Mark was able to sit still and focus on learning.

Lisa

Because Lisa wasn't disruptive in class, it took a long time for teachers to notice her problem. Lisa was first referred to the school evaluation team when her teacher realized that she was a bright girl with failing grades. The team ruled out a learning disability but determined that she had an attention deficit, ADHD without hyperactivity. The school psychologist recognized that Lisa was also dealing with depression.

Lisa's teachers and the school psychologist developed a treatment plan that included participation in a program to increase her attention span and develop her social skills. They also recommended that Lisa receive counseling to help her recognize her strengths and overcome her depression.

Henry

When Henry's son entered kindergarten, it was clear that he was going to have problems sitting quietly and concentrating. After several disruptive incidents, the school called and suggested that his son be evaluated for ADHD. As the boy was assessed, Henry realized that he had grown up with the same symptoms that specialists were now finding in his son. Fortunately, the psychologist knew that ADHD can persist in adults. She suggested that Henry be evaluated by a professional who worked with adults. For the first time, Henry was correctly diagnosed and given Ritalin to aid his concentration. What a relief! All the years that he had been unable to concentrate were due to a disorder that could be identified, and above all, treated.

How is ADHD identified and diagnosed?

Many parents see signs of an attention deficit in toddlers long before the child enters school. For example, as a 3-year-old, Henry's son already displayed some signs of hyperactivity. He seemed to lose interest and dart off even during his favorite TV shows or while playing games. Once, during a game of "catch," he left the game before the ball even reached him!

Like Henry's son, a child may be unable to focus long enough to play a simple game. Or, like Mark, the child may be tearing around out of control. But because children mature at different rates, and are very different in personality, temperament, and energy level, it's useful to get an expert's opinion of whether the behaviors are appropriate for the child's age. Parents can ask their pediatrician, or a child psychologist or psychiatrist to assess whether their toddler has an attention disorder or is just immature, has hyperactivity or is just exuberant.

Seeing a child as "a chip off the old block" or "just like his dad" can blind parents to the need for help. Parents may find it hard to see their child's behavior as a problem when it so closely resembles their own. In fact, like Henry, many parents first recognize their own disorder only when their children are diagnosed.

In many cases, the teacher is the first to recognize that a child is hyperactive or inattentive and may consult with the school psychologist. Because teachers work with many children, they come to know how "average" children behave in learning situations that require attention and self control. However, teachers sometimes fail to notice the needs of children like Lisa who are quiet and cooperative.

Types of professionals who make the diagnosis

School-age and preschool children are often evaluated by a school psychologist or a team made up of the school psychologist and other specialists. But if the school doesn't believe the student has a problem, or if the family wants another opinion, a family may need to see a specialist in private practice. In such cases, who can the family turn to? What kinds of specialists do they need?

Specialty	Can diagnose ADHD	Can prescribe medications, if needed	Provides counseling or training
Psychiatrists	yes	yes	yes
Psychologists	yes	no	yes
Pediatricians or family physicians	yes	yes	no
Neurologists	yes	yes	no

The family can start by talking with the child's pediatrician or their family doctor. Some pediatricians may do the assessment themselves, but more often they refer the family to an appropriate specialist they know and trust. In addition, state and local agencies that serve families and children, as well as some of the volunteer organizations listed in the back of this booklet, can help identify an appropriate specialist.

Knowing the differences in qualifications and services can help the family choose someone who can best meet their needs. Besides school psychologists, there are several types of specialists qualified to diagnose and treat ADHD.

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Child psychiatrists are doctors who specialize in diagnosing and treating childhood mental and behavioral disorders. A psychiatrist can provide therapy and prescribe any needed medications. Child psychologists are also qualified to diagnose and treat ADHD. They can provide therapy for the child and help the family develop ways to deal with the disorder. But psychologists are not medical doctors and must rely on the child's physician to do medical exams and prescribe medication. Neurologists, doctors who work with disorders of the brain and nervous system, can also diagnose ADHD and prescribe medicines. But unlike psychiatrists and psychologists, neurologists usually do not provide therapy for the emotional aspects of the disorder. Adults who think they may have ADHD can also seek a psychologist, psychiatrist, or neurologist. But at present, not all specialists are skilled in identifying or treating ADHD in adults.

The specialist's first task is to gather information that will rule out other possible reasons for the child's behavior.

Within each specialty, individual doctors and mental health professionals differ in their experience with ADHD. So in selecting a specialist, it's important to find someone with specific training and experience in diagnosing and treating the disorder.

Steps in making a diagnosis

Whatever the specialist's expertise, his or her first task is to gather information that will rule out other possible reasons for the child's behavior. In ruling out other causes, the specialist checks the child's school and medical records. The specialist tries to sense whether the home and classroom environments are stressful or chaotic, and how the child's parents and teachers deal with the child. They may have a doctor look for such problems as emotional disorders, undetectable (petit mal) seizures, and poor vision or hearing. Most schools automatically screen for vision and hearing, so this information is often already on record. A doctor may also look for allergies or nutrition problems like chronic "caffeine highs" that might make the child seem overly active.

Next the specialist gathers information on the child's ongoing behavior in order to compare these behaviors to the symptoms and diagnostic criteria listed in the DSM (*Diagnostic and Statistical Manual of Mental Disorders*).

This involves talking with the child and if possible, observing the child in class and in other settings.

The child's teachers, past and present, are asked to rate their observations of the child's behavior on standardized evaluation forms to compare the child's behaviors to those of other children the same age. Of course, rating scales are subjective—they only capture the teacher's personal perception of the child. Even so, because teachers get to know so many children, their judgment of how a child compares to others is usually accurate.

The specialist interviews the child's teachers, parents, and other people who know the child well, such as school staff and baby-sitters. Parents are asked to describe their child's behavior in a variety of situations. They may also fill out a rating scale to indicate how severe and frequent the behaviors seem to be.

In some cases, the child may be checked for social adjustment and mental health. Tests of intelligence and learning achievement may be given to see if the child has a learning disability and whether the disabilities are in all or only certain parts of the school curriculum.

In looking at the data, the specialist pays special attention to the child's behavior during noisy or unstructured situations, like parties, or during tasks that require sustained attention, like reading, working math problems, or playing a board game. Behavior during free play or while getting individual attention is given less importance in the evaluation. In such situations, most children with ADHD are able to control their behavior and perform well.

The specialist then pieces together a profile of the child's behavior. Which ADHD-like behaviors listed in the DSM does the child show? How often? In what situations? How long has the child been doing them? How old was the child when the problem started? Are the behaviors seriously interfering with the child's friendships, school activities, or home life? Does the child have any other related problems? The answers to these questions help identify whether the child's hyperactivity, impulsivity, and inattention are significant and long-standing. If so, the child may be diagnosed with ADHD.

Adults are diagnosed for ADHD based on their performance at home and at work. When possible, their parents are asked to rate the person's behavior as a child. A spouse or roommate can help rate and evaluate current behaviors. But for the most part, adults are asked to describe their own experiences. One symptom is a sense of frustration. Since people with ADHD are often bright and creative, they often report feeling frustrated that they're not living up to their potential. Many also feel restless and are easily bored. Some say they need to seek novelty and excitement to help channel the whirlwind in their minds. Although it may be impossible to document when these behaviors first started, most adults with ADHD can give examples of being inattentive, impulsive, overly active, impatient, and disorganized most of their lives.

Half the children with ADHD continue to have symptoms through adulthood.

Until recent years, adults were not thought to have ADHD, so many adults with ongoing symptoms have never been diagnosed. People like Henry go for decades knowing that something is wrong, but not knowing what it is. Psychotherapy and medication for anxiety, depression, or manic-depression fail to help much, simply because the ADHD itself is not being addressed. Yet half the children with ADHD continue to have symptoms through adulthood. The recent awareness of adult ADHD means that many people can finally be correctly diagnosed and treated.

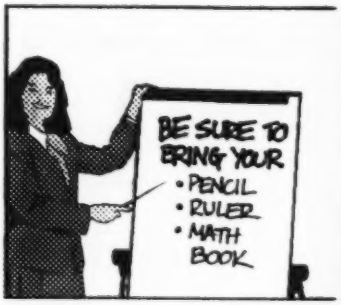
A correct diagnosis lets people move forward in their lives. Once the disorder is known, they can begin to receive whatever combination of educational, medical, and emotional help they need.

An effective treatment plan helps people with ADHD and their families at many levels. For adults with ADHD, the treatment plan may include medication, along with practical and emotional support. For children and adolescents, it may include providing an appropriate classroom setting, the right medication, and helping parents to manage their child's behavior.

What are the educational options?

Children with ADHD have a variety of needs. Some children are too hyperactive or inattentive to function in a regular classroom, even with medication and a behavior management plan. Such children may be placed in a special education class for all or part of the day. In some schools, the special education teacher teams with the classroom teacher to meet each child's unique needs. However, most children are able to stay in the regular classroom. Whenever possible, educators prefer to not to segregate children, but to let them learn along with their peers.

Children with ADHD often need some special accommodations to help them learn. For example, the teacher may seat the child in an area with few distractions, provide an area where the child can move around and release excess energy, or establish a clearly posted system of rules and reward appropriate behavior. Sometimes just keeping a card or a picture on the desk can serve as a visual reminder to use the right school behavior, like raising a hand instead of shouting out, or staying in a seat instead of wandering around the room. Giving a child like Lisa extra time on tests can make the difference between passing and failing, and gives her a fairer chance to show what she's learned. Reviewing instructions or writing assignments on the board, and even listing the books and materials they will need for the task, may make it possible for disorganized, inattentive children to complete the work.



Many of the strategies of special education are simply good teaching methods. Telling students in advance what they will learn, providing visual aids, and giving written as well as oral instructions are all ways to help students focus and remember the key parts of the lesson.

Students with ADHD often need to learn techniques for monitoring and controlling their own attention and behavior. For example, Mark's teacher taught him several alternatives for when he loses track of what he's supposed to do. He can look for instructions on the blackboard, raise his hand, wait to see if he remembers, or quietly ask another child. The process of finding alternatives to interrupting the teacher has made him more self-sufficient and cooperative. And because he now interrupts less, he is beginning to get more praise than reprimands.

In Lisa's class, the teacher frequently stops to ask students to notice whether they are paying attention to the lesson or if they are thinking about something else. The students record their answer on a chart. As students become more consciously aware of their attention, they begin to see progress and feel good about staying better focused. The process helped make Lisa aware of when she was drifting off, so she could return her attention to the lesson faster. As a result, she became more productive and the quality of her work improved.

Because schools demand that children sit still, wait for a turn, pay attention, and stick with a task, it's no surprise that many children with ADHD have problems in class. Their minds are fully capable of learning, but their hyperactivity and inattention make learning difficult. As a result, many students with ADHD repeat a grade or drop out of school early. Fortunately, with the right combination of appropriate educational practices, medication, and counseling, these outcomes can be avoided.

Right to a free public education

Although parents have the option of taking their child to a private practitioner for evaluation and educational services, most children with ADHD qualify for free services within the public schools. Steps are taken to ensure that each child with ADHD receives an education that meets his or her unique needs. For example, the special education teacher, working with parents, the school psychologist, school administrators, and the classroom teacher, must assess the child's strengths and weaknesses and design an Individualized Educational Program (IEP). The IEP outlines the specific skills the child needs to develop as well as appropriate learning activities that build on the child's strengths. Parents play an important role in the process. They must be included in meetings and given an opportunity to review and approve their child's IEP.

Many children with ADHD or other disabilities are able to receive such special education services under the Individuals with Disabilities Education Act (IDEA). The Act guarantees appropriate services and a public education to children with disabilities from ages 3 to 21. Children who do not qualify for services under IDEA can receive help under an earlier law, the National Rehabilitation Act,

Some coping strategies for teens and adults with ADHD

When necessary, ask the teacher or boss to repeat instructions, rather than guess.

Break large assignments or job tasks into small, simple tasks. Set a deadline for each task and reward yourself as you complete each one.

Each day, make a list of what you need to do. Plan the best order for doing each task. Then make a schedule for doing them. Use a calendar or daily planner to keep yourself on track.

Work in a quiet area. Do one thing at a time. Give yourself short breaks.

Write things you need to remember in a notebook with dividers. Write different kinds of information—like assignments, appointments, and phone numbers—in different sections. Keep the book with you all of the time.

Post notes to yourself to help remind yourself of things you need to do. Tape notes on the bathroom mirror, on the refrigerator, in your school locker, or dashboard of your car—wherever you're likely to need the reminder.

Store similar things together. For example, keep all your Nintendo disks in one place, and tape cassettes in another. Keep canceled checks in one place, and bills in another.

Create a routine. Get yourself ready for school or work at the same time, in the same way, every day.

Exercise, eat a balanced diet, and get enough sleep.

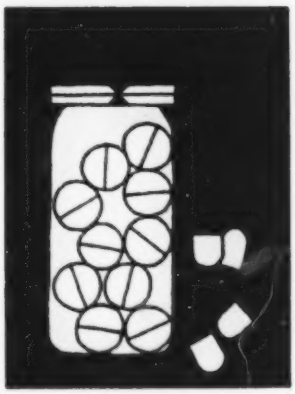
Adapted from: Weinstein, C. "Cognitive Remediation Strategies." *Journal of Psychotherapy Practice and Research*. 3(1):44-57, 1994.

Section 504, which defines disabilities more broadly. Qualifying for services under the National Rehabilitation Act is often called "504 eligibility."

Because ADHD is a disability that affects children's ability to learn and interact with others, it can certainly be a disabling condition. Under one law or another, most children can receive the services they need.

What treatments are available?

For decades, medications have been used to treat the symptoms of ADHD. Three medications in the class of drugs known as stimulants seem to be the most effective in both children and adults. These are methylphenidate (Ritalin), dextroamphetamine (Dexedrine or Dextrostat), and pemoline (Cylert). For many people, these medicines dramatically reduce their hyperactivity and improve their ability to focus, work, and learn. The medications may also improve physical coordination, such as handwriting and ability in sports. Recent research by NIMH suggests that these medicines may also help children with an accompanying conduct disorder to control their impulsive, destructive behaviors.



Ritalin helped Henry focus on and complete tasks for the first time. Dexedrine helped Mark to sit quietly, focus his attention, and participate in class so he could learn. He also became less impulsive and aggressive. Along with these changes in his behavior, Mark began to make and keep friends.

Unfortunately, when people see such immediate improvement, they often think medication is all that's needed. But these medicines don't cure the disorder, they only temporarily control the symptoms. Although the drugs help people pay better attention and complete their work, they can't increase knowledge or improve academic skills. The drugs alone can't help people feel better about themselves or cope with problems. These require other kinds of treatment and support.

For lasting improvement, numerous clinicians recommend that medications should be used along with treatments that aid in these other areas. There are no quick cures. Many experts believe that the most significant,

long-lasting gains appear when medication is combined with behavioral therapy, emotional counseling, and practical support. Some studies suggest that the combination of medicine and therapy may be more effective than drugs alone. NIMH is conducting a large study to check this.

Use of stimulant drugs

Stimulant drugs, such as Ritalin, Cylert, and Dexedrine, when used with medical supervision, are usually considered quite safe. Although they can be addictive to teenagers and adults if misused, these medications are not addictive in children. They seldom make children "high" or jittery. Nor do they sedate the child. Rather, the stimulants help children control their hyperactivity, inattention, and other behaviors.

Many experts believe that the most significant, long-lasting gains appear when medication is combined with behavioral therapy, emotional counseling, and practical support.

Different doctors use the medications in slightly different ways. Cylert is available in one form, which naturally lasts 5 to 10 hours. Ritalin and Dexedrine come in short-term tablets that last about 3 hours, as well as longer-term preparations that last through the school day. The short-term dose is often more practical for children who need medication only during the school day or for special situations, like attending church or a prom, or studying for an important exam. The sustained-release dosage frees the child from the inconvenience or embarrassment of going to the office or school nurse every day for a pill. The doctor can help decide which preparation to use, and whether a child needs to take the medicine during school hours only or in the evenings and on weekends, too.

Nine out of 10 children improve on one of the three stimulant drugs. So if one doesn't help, the others should be tried. Usually a medication should be tried for a week to see if it helps. If necessary, however, the doctor will also try adjusting the dosage before switching to a different drug.

Other types of medication may be used if stimulants don't work or if the ADHD occurs with another disorder. Antidepressants and other medications may be used to help control accompanying depression or anxiety. In some cases, antihistamines may be tried. Clonidine, a drug

normally used to treat hypertension, may be helpful in people with both ADHD and Tourette's syndrome. Although stimulants tend to be more effective, clonidine may be tried when stimulants don't work or can't be used. Clonidine can be administered either by pill or by skin patch and has different side effects than stimulants. The doctor works closely with each patient to find the most appropriate medication.

Sometimes, a child's ADHD symptoms seem to worsen, leading parents to wonder why. They can be assured that a drug that helps rarely stops working. However, they should work with the doctor to check that the child is getting the right dosage. Parents should also make sure that the child is actually getting the prescribed daily dosage at home or at school—it's easy to forget. They also need to know that new or exaggerated behaviors may also crop up when a child is under stress. The challenges that all children face, like changing schools or entering puberty, may be even more stressful for a child with ADHD.

Some doctors recommend that children be taken off a medication now and then to see if the child still needs it. They recommend temporarily stopping the drug during school breaks and summer vacations, when focused attention and calm behavior are usually not as crucial. These "drug holidays" work well if the child can still participate at camp or other activities without medication.

Children on medications should have regular checkups. Parents should also talk regularly with the child's teachers and doctor about how the child is doing. This is especially important when a medication is first started, re-started, or when the dosage is changed.

The medication debate

As useful as these drugs are, Ritalin and the other stimulants have sparked a great deal of controversy. Most doctors feel the potential side effects should be carefully weighed against the benefits before prescribing the drugs. While on these medications, some children may lose weight, have less appetite, and temporarily grow more slowly. Others may have problems falling asleep. Some doctors believe that stimulants may also make the symptoms of Tourette's syndrome worse, although recent

Myths about stimulant medication

- **Myth:** Stimulants can lead to drug addiction later in life.

  Fact: Stimulants help many children focus and be more successful at school, home, and play. Avoiding negative experiences now may actually help prevent addictions and other emotional problems later.

- **Myth:** Responding well to a stimulant drug proves a person has ADHD.

  Fact: Stimulants allow many people to focus and pay better attention, whether or not they have ADHD. The improvement is just more noticeable in people with ADHD.

- **Myth:** Medication should be stopped when the child reaches adolescence.

  Fact: Not so! About 80 percent of those who needed medication as children still need it as teenagers. Fifty percent need medication as adults.

research suggests this may not be true. Other doctors say if they carefully watch the child's height, weight, and overall development, the benefits of medication far outweigh the potential side effects. Side effects that do occur can often be handled by reducing the dosage.

It's natural for parents to be concerned about whether taking a medicine is in their child's best interests. Parents need to be clear about the benefits and potential risks of using these drugs. The child's pediatrician or psychiatrist can provide advice and answer questions.

Another debate is whether Ritalin and other stimulant drugs are prescribed unnecessarily for too many children. Remember that many things, including anxiety, depression, allergies, seizures, or problems with the home or school environment can make children seem overactive,

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impulsive, or inattentive. Critics argue that many children who do not have a true attention disorder are medicated as a way to control their disruptive behaviors.

Medication and self-esteem

When a child's schoolwork and behavior improve soon after starting medication, the child, parents, and teachers tend to applaud the drug for causing the sudden change. But these changes are actually the child's own strengths and natural abilities coming out from behind a cloud. Giving credit to the medication can make the child feel incompetent. The medication only makes these changes possible. The child must supply the effort and ability. To help children feel good about themselves, parents and teachers need to praise the child, not the drug.

It's also important to help children and teenagers feel comfortable about a medication they must take every day. They may feel that because they take medicine they are different from their classmates or that there's something seriously wrong with them. CH.A.D.D. (which stands for Children and Adults with Attention Deficit Disorders), a leading organization for people with attention disorders, suggests several ways that parents and teachers can help children view the medication in a positive way:

- Compare the pills to eyeglasses, braces, and allergy medications used by other children in their class. Explain that their medicine is simply a tool to help them focus and pay attention.
- Point out that they're lucky their problem can be helped. Encourage them to identify ways the medicine makes it easier to do things that are important to them, like make friends, succeed at school, and play.

Treatments to help people with ADHD and their families learn to cope

Life can be hard for children with ADHD. They're the ones who are so often in trouble at school, can't finish a game, and lose friends. They may spend agonizing hours each night struggling to keep their mind on their homework, then forget to bring it to school.

It's not easy coping with these frustrations day after day. Some children release their frustration by acting contrary, starting fights, or destroying property. Some turn the frustration into body ailments, like the child who gets a stomachache each day before school. Others hold their needs and fears inside, so that no one sees how badly they feel.

It's also difficult having a sister, brother, or classmate who gets angry, grabs your toys, and loses your things. Children who live with or share a classroom with a child who has ADHD get frustrated, too. They may feel neglected as their parents or teachers try to cope with the hyperactive child. They may resent their brother or sister never finishing chores, or being pushed around by a classmate. They want to love their sibling and get along with their classmate, but sometimes it's so hard!

It's especially hard being the parent of a child who is full of uncontrolled activity, leaves messes, throws tantrums, and doesn't listen or follow instructions. Parents often feel powerless and at a loss. The usual methods of discipline, like reasoning and scolding, don't work with this child, because the child doesn't really *choose* to act in these ways. It's just that their self-control comes and goes. Out of sheer frustration, parents sometimes find themselves spanking, ridiculing, or screaming at the child, even though they know it's not appropriate. Their response leaves everyone more upset than before. Then they blame themselves for not being better parents. Once children are diagnosed and receiving treatment, some of the emotional upset within the family may fade.

Medication can help to control some of the behavior problems that may have lead to family turmoil. But more often, there are other aspects of the problem that medication can't touch. Even though ADHD primarily affects a person's behavior, having the disorder has broad emotional repercussions. For some children, being scolded is the only attention they ever get: They have few experiences that build their sense of worth and competence. If they're hyperactive, they're often told they're bad and punished for being disruptive. If they are too disorganized and unfocused to complete tasks, others may call them lazy. If they impulsively grab toys, butt in,

or shove classmates, they may lose friends. And if they have a related conduct disorder, they may get in trouble at school or with the law. Facing the daily frustrations that can come with having ADHD can make people fear that they are strange, abnormal, or stupid.

Often, the cycle of frustration, blame, and anger has gone on so long that it will take some time to undo. Both parents and their children may need special help to develop techniques for managing the patterns of behavior. In such cases, mental health professionals can counsel the child and the family, helping them to develop new skills, attitudes, and ways of relating to each other. In individual counseling, the therapist helps children or adults with ADHD learn to feel better about themselves. They learn to recognize that having a disability does not reflect who they are as a person. The therapist can also help people with ADHD identify and build on their strengths, cope with daily problems, and control their attention and aggression. In group counseling, people learn that they are not alone in their frustration and that others want to help. Sometimes only the individual with ADHD needs counseling support. But in many cases, because the problem affects the family as well as the person with ADHD, the entire family may need help. The therapist assists the family in finding better ways to handle the disruptive behaviors and promote change. If the child is young, most of the therapist's work is with the parents, teaching them techniques for coping with and improving their child's behavior.

Children with ADHD and their parents may need special help to develop techniques for managing behavior.

Several intervention approaches are available and different therapists tend to prefer one approach or another. Knowing something about the various types of interventions makes it easier for families to choose a therapist that is right for their needs.

Psychotherapy works to help people with ADHD to like and accept themselves despite their disorder. In psychotherapy, patients talk with the therapist about upsetting thoughts and feelings, explore self-defeating patterns of behavior, and learn alternative ways to handle their emotions. As they talk, the therapist tries to help them understand how they can change. However, people

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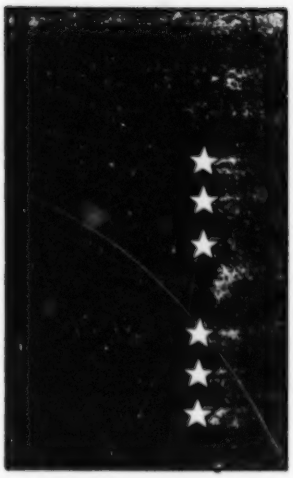
dealing with ADHD usually want to gain control of their symptomatic behaviors more directly. If so, more direct kinds of intervention are needed.

Cognitive-behavioral therapy helps people work on immediate issues. Rather than helping people understand their feelings and actions, it supports them directly in changing their behavior. The support might be practical assistance, like helping Henry learn to think through tasks and organize his work. Or the support might be to encourage new behaviors by giving praise or rewards each time the person acts in the desired way. A cognitive-behavioral therapist might use such techniques to help a belligerent child like Mark learn to control his fighting, or an impulsive teenager like Lisa to think before she speaks.

Social skills training can also help children learn new behaviors. In social skills training, the therapist discusses and models appropriate behaviors like waiting for a turn, sharing toys, asking for help, or responding to teasing, then gives children a chance to practice. For example, a child might learn to "read" other people's facial expression and tone of voice, in order to respond more appropriately. Social skills training helped Lisa learn to join in group activities, make appropriate comments, and ask for help. A child like Mark might learn to see how his behavior affects others and develop new ways to respond when angry or pushed.

Support groups connect people who have common concerns. Many adults with ADHD and parents of children with ADHD find it useful to join a local or national support group. Many groups deal with issues of children's disorders, and even ADHD specifically. The national associations listed at the back of this booklet can explain how to contact a local chapter. Members of support groups share frustrations and successes, referrals to qualified specialists, and information about what works, as well as their hopes for themselves and their children. There is strength in numbers—and sharing experiences with others who have similar problems helps people know that they aren't alone.

. ***Parenting skills training,*** offered by therapists or in special classes, gives parents tools and techniques for managing their child's behavior. One such technique is the use of "time out" when the child becomes too unruly or out of control. During time outs, the child is removed from the agitating situation and sits alone quietly for a short time to calm down. Parents may also be taught to give the child "quality time" each day, in which they share a pleasurable or relaxed activity. During this time together, the parent looks for opportunities to notice and point out what the child does well, and praise his or her strengths and abilities.



An effective way to modify a child's behavior is through a system of rewards and penalties. The parents (or teacher) identify a few desirable behaviors that they want to encourage in the child—such as asking for a toy instead of grabbing it, or completing a simple task. The child is told exactly what is expected in order to earn the reward. The child receives the reward when he performs the desired behavior and a mild penalty when he doesn't. A reward can be small, perhaps a token that can be exchanged for special privileges, but it should be something the child wants and is eager to earn. The penalty might be removal of a token or a brief "time out." The goal, over time, is to help children learn to control their own behavior and to choose the more desired behavior. The technique works well with all children, although children with ADHD may need more frequent rewards.

In addition, parents may learn to structure situations in ways that will allow their child to succeed. This may include allowing only one or two playmates at a time, so that their child doesn't get overstimulated. Or if their child has trouble completing tasks, they may learn to help the child divide a large task into small steps, then praise the child as each step is completed.

Parents may also learn to use stress management methods, such as meditation, relaxation techniques, and exercise to increase their own tolerance for frustration, so that they can respond more calmly to their child's behavior.

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Controversial treatments

Understandably, parents who are eager to help their children want to explore every possible option. Many newly touted treatments sound reasonable. Many even come with glowing reports. A few are pure quackery. Some are even developed by reputable doctors or specialists—but when tested scientifically, cannot be proven to help.

Here are a few types of treatment that have *not* been scientifically shown to be effective in treating the majority of children or adults with ADHD:

- biofeedback
- restricted diets
- allergy treatments
- medicines to correct problems in the inner ear
- megavitamins
- chiropractic adjustment and bone re-alignment
- treatment for yeast infection
- eye training
- special colored glasses

A few success stories can't substitute for scientific evidence. Until sound, scientific testing shows a treatment to be effective, families risk spending time, money, and hope on fads and false promises.

Sustaining Hope

Mark

Today, at age 14, Mark is doing much better in school. He channels his energy into sports and is a star player on the intramural football team. Although he still gets into fights now and then, a child psychologist is helping him learn to control his tantrums and frustration, and he is able to make and keep friends. His grandparents point to him with pride and say, "We knew he'd turn out just fine!"

Lisa

Lisa is about to graduate from high school. She's better able to focus her attention and concentrate on her work, so that now her grades are quite good. Overcoming her depression and learning to like herself have also given her more confidence to develop friendships and try new things.

Lately, she has been working with the school guidance counselor to identify the right kind of job to look for after graduation. She hopes to find a career that will bypass her attention problems and make the best use of her assets and skills. She is more alert and focused and is considering trying college in a year or two. Her counselor reminds her that she's certainly smart enough.

Henry

These days, Henry is successful and happy in his job as a shoe salesman. The work allows him to move around throughout the day, and the appearance of new customers provides the variety he needs to help him stay focused. He recently completed a course in time management, and now keeps lists, organizes his work, and schedules his day. Now that he has harnessed his energy, his ability to think about several things at once allows him to be creative and productive.

He is proud that he and his wife have developed important parenting skills for working with their son, so that he, too, is doing better at home and at school. Henry is also pleased with his new ability to follow through on projects. In fact, he just finished making his son a beautiful wooden toy chest for his birthday.

Can ADHD be outgrown or cured?

Even though most people don't outgrow ADHD, people do learn to adapt and live fulfilling lives. Mark, Lisa, and Henry are making good lives for themselves—not by being cured, but by developing their personal strengths. With effective combinations of medicine, new skills, and emotional support, people with ADHD can develop ways to control their attention and minimize their disruptive behaviors. Like Henry, they may find that by structuring tasks and controlling their environment, they can achieve personal goals. Like Mark, they may learn to channel their excess energy into sports and other high energy activities. And like Lisa, they can identify career options that build on their strengths and abilities.

As they grow up, with appropriate help from parents and clinicians, children with ADHD become better able to suppress their hyperactivity and to channel it into more socially acceptable behaviors, like physical exercise or fidgeting. And although we know that half of all children with ADHD will still show signs of the problem into adulthood, we also know that the medications and therapy that help children also work for adults.

All people with ADHD have natural talents and abilities that they can draw on to create fine lives and careers for themselves. In fact, many people with ADHD even feel that their patterns of behavior give them unique, often unrecognized, advantages. People with ADHD tend to be outgoing and ready for action. Because of their drive for excitement and stimulation, many become successful in business, sports, construction, and public speaking. Because of their ability to think about many things at once, many have won acclaim as artists and inventors. Many choose work that gives them freedom to move around and release excess energy. But some find ways to be effective in quieter, more sedentary careers. Sally, a computer programmer, found that she thinks best when she wears headphones to reduce distracting noises. Like Henry, some people strive to increase their organizational skills. Others who own their own business find it useful to hire support staff to provide day-to-day management.

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What hope does research offer?

Although no immediate cure is in sight, a new understanding of ADHD may be just over the horizon. Using a variety of research tools and methods, scientists are beginning to uncover new information on the role of the brain in ADHD and effective treatments for the disorder. Such research will ultimately result in improving the personal fulfillment and productivity of people with ADHD.

For example, the use of new techniques like brain imaging to observe how the brain actually works is already providing new insights into the causes of ADHD. Other research is seeking to identify conditions of pregnancy and early childhood that may cause or contribute to these differences in the brain. As the body of knowledge grows, scientists may someday learn how to prevent these differences or at least how to treat them.

Using a variety of research tools and methods, scientists are beginning to uncover new information on the role of the brain in ADHD and effective treatments for the disorder.

NIMH and the U.S. Department of Education are cosponsoring a large national study—the first of its kind—to see which combinations of ADHD treatment work best for different types of children. During this 5-year study, scientists at research clinics across the country will work together in gathering data to answer such questions as: Is combining stimulant medication with behavior modification more effective than either alone? Do boys and girls respond differently to treatment? How do family stresses, income, and environment affect the severity of ADHD and long-term outcomes? How does needing medicine affect children's sense of competence, self-control, and self-esteem? As a result of such research, doctors and mental health specialists may someday know who benefits most from different types of treatment and be able to intervene more effectively.

NIMH grantees are also trying to determine if there are different varieties of attention deficit. With further study, researchers may find that ADHD actually covers a number of different disorders, each with its own cluster of symptoms and treatment requirements. For example, scientists are exploring whether there are any critical differences between children with ADHD who also have anxiety, depression, or conduct disorders and those who do not. Other researchers are studying slight physical differences that might distinguish one type of ADHD from

another. If clusters of differences can be found, scientists can begin to distinguish the treatment each type needs.

Other NIMH-sponsored research is examining the long-term outcome of ADHD. How do children with ADHD turn out, compared to brothers and sisters without the disorder? As adults, how do they handle their own children? Still other studies seek to better understand ADHD in adults. Such studies give insights into what types of treatment or services make a difference in helping an ADHD child grow into a caring parent and a well-functioning adult.

Animal studies are also adding to our knowledge of ADHD in humans. Animal subjects make it possible to study some of the possible causes of ADHD in ways that can't be studied in people. In addition, animal research allows the safety and effectiveness of experimental new drugs to be tested long before they can be given to humans. One NIH-sponsored team of scientists is studying dogs to learn how new stimulant drugs that are similar to Ritalin act on the brain.

Piece by piece, through studies of humans and animals, scientists are beginning to understand the biological nature of attention disorders. New research is allowing us to better understand the inner workings of the brain as we continue to develop new medications and assess new forms of treatment.

As we learn more about what actually happens inside the brain, we approach a future where we can prevent certain brain and mental disorders, make valid diagnoses, and treat each effectively. This is the hope, mission, and vision of the National Institute of Mental Health.

What are sources of information and support?

Several publications, organizations, and support groups exist to help individuals, teachers, and families to understand and cope with attention disorders. The following resources provide a good starting point for gaining insight, practical solutions, and support. Other resources are outpatient clinics of children's hospitals, university medical centers, and community mental health centers. Additional printed information can be found at libraries and book stores.

Books for children and teens

Galvin, M. *Otto Learns about his Medication*. New York: Magination Press, 1988. (for young children)

Gehret, J. *Learning Disabilities and the Don't Give Up Kid*. Fairport, New York: Verbal Images Press, 1990. (for classmates and children with learning disabilities and attention difficulties, ages 7-12)

Gordon, M. *Jumpin' Johnny, Get Back to Work! A Child's Guide to ADHD/Hyperactivity*. DeWitt, New York: GSI Publications, 1991. (for ages 7-12)

Meyer, D.; Vadasy, P.; and Fewell, R. *Living with a Brother or Sister with Special Needs: A Book for Sibs*. Seattle: University of Washington Press, 1985.

Moss, D. *Shelly the Hyperactive Turtle*. Rockville, MD: Woodbine House, 1989. (for young children)

Nadeau, K., and Dixon, E. *Learning to Slow Down and Pay Attention*. Annandale, VA: Chesapeake Psychological Publications, 1993.

Parker, R. *Making the Grade: An Adolescent's Struggle with ADD*. Plantation, FL: Impact Publications, 1992.

Quinn, P., and Stern, J. *Putting on the Brakes: Young People's Guide to Understanding Attention Deficit Hyperactivity Disorder*. New York: Magination Press, 1991. (for ages 8-12)

Thompson, M. *My Brother Matthew*. Rockville, MD: Woodbine House, 1992.

Books for adults with attention disorders

Adelman, P., and Wren, C. *Learning Disabilities, Graduate School, and Careers: The Student's Perspective*. Lake Forest, IL: Learning Opportunities Program, Barat College, 1990.

Hallowell, E., and Ratey, J. *Driven to Distraction*. New York: Pantheon Books, 1994.

Hartmann, T. *Attention Deficit Disorder: A New Perception*. Lancaster, PA: Underwood-Miller, 1993.

Kelly, K., and Ramundo, P. *You Mean I'm Not Lazy, Stupid, or Crazy?!* Cincinnati, OH: Tyrell and Jeremy Press, 1993.

Weiss, G., and Hechtman, L. (eds). *Hyperactive Children Grown Up*. 2d ed. New York: Guilford Press, 1992.

Weiss, L. *Attention Deficit Disorder in Adults*. Dallas, TX: Taylor Pub. Co., 1992.

Wender, P. *The Hyperactive Child, Adolescence, and Adult: Attention Deficit Disorder Through the Lifespan*. New York: Oxford University Press, 1987.

Books for parents

Anderson, W.; Chitwood, S.; and Hayden, D. *Negotiating the Special Education Maze: A Guide for Parents and Teachers*. 2d ed. Rockville, MD: Woodbine House, 1990.

Bain, L. *A Parent's Guide to Attention Deficit Disorders*. New York: Dell Publishing, 1991.

Barkley, R. *Defiant Children*. New York: Guilford Press, 1987.

Child Psychopharmacy Center, University of Wisconsin. *Stimulants and Hyperactive Children*. Madison: 1990. Order by calling (608) 263-6171.

Copeland, E., and Love, V. *Attention, Please!: A Comprehensive Guide for Successfully Parenting Children with Attention Disorders and Hyperactivity*. Atlanta, GA: SPI Press, 1991.

Fowler, M. *Maybe You Know My Kid: A Parent's Guide to Identifying, Understanding, and Helping your Child with ADHD*. New York: Birch Lane Press, 1990.

Goldstein, S., and Goldstein, M. *Hyperactivity: Why Won't My Child Pay Attention?* New York: J. Wiley, 1992.

Greenberg, G.; Horn, S.; and Wade F. *Attention Deficit Hyperactivity Disorder: Questions & Answers for Parents*. Champaign, IL: Research Press, 1991.

Ingersoll, B., and Goldstein, S. *Attention Deficit Disorder and Learning Disabilities: Realities, Myths, and Controversial Treatments*. New York: Doubleday, 1993.

Moss, R., and Dunlap, H. *Why Johnny Can't Concentrate: Coping with Attention Deficit Problems*. New York: Bantam Books, 1990.

Kennedy, P.; Terdal, L.; and Fusetti, L. *The Hyperactive Child Book*. New York: St. Martrin's Press, 1993.

Silver, L. *Dr. Silver's Advice to Parents on Attention-Deficit Hyperactivity Disorder*. Washington, DC: American Psychiatric Press, 1993.

Vail, P. *Smart Kids with School Problems*. New York: EP Dutton, 1987.

Wilson, N. *Optimizing Special Education: How Parents Can Make a Difference*. New York: Insight Books, 1992.

Windell, J. *Discipline: A Sourcebook of 50 Failsafe Techniques for Parents*. New York: Collier Books, 1991.

Other resources

For individuals with a computer and modem, there are on-line bulletin boards where parents, adults with ADHD, and medical professionals share experiences, offer emotional support, and ask and respond to questions. Two such on-line services include CompuServe [(800) 848-8990] and America Online [(800) 827-6364]. You may also wish to check with other national and local on-line communications companies to see if they offer similar services.

Resources for teachers and specialists

Barkley, R. *Attention Deficit Hyperactivity Disorder* (four 40-minute videocassettes in VHS format). New York: Guilford Publications, 1990.

Copeland, E., and Love, V. *Attention Without Tension: A Teacher's Handbook on Attention Disorders*. Atlanta, GA: 3 C's of Childhood, 1992.

Harris, K., and Graham, S. *Helping Young Writers Master the Craft*. Cambridge, MA: Brookline Books, 1992.

Johnson, D. *I Can't Sit Still—Educating and Affirming Inattentive and Hyperactive Children: Suggestions for Parents, Teachers, and Other Care Providers of Children to Age 10*. Santa Cruz, CA: ETR Associates, 1992.

Parker, H. *The ADD Hyperactivity Handbook for Schools*. Plantation, FL: Impact Publications, 1992.

Related materials available from NIH

Attention Deficit Disorder Information Packet and *Know Your Brain Fact Sheet*. Both are available from NIH Neurological Institute, P.O. Box 5801; Bethesda, MD 20824 (800) 352-9424

Learning Disabilities (NIH Pub. No. 93-3611) and *Plain Talk about Depression* (NIH Pub. No. 93-3561). These are available by contacting: NIMH, Room 7C-02, 5600 Fishers Lane, Rockville, MD 20857.

Support groups and organizations

Attention Deficit Information Network (Ad-IN)
475 Hillside Avenue
Needham, MA 02194
(617) 455-9895
Provides up-to-date information on current research, regional meetings. Offers aid in finding solutions to practical problems faced by adults and children with an attention disorder.

ADD Warehouse
300 NW 70th Avenue
Plantation, FL 33317
(800) 233-9273
Distributes books, tapes, videos, assessment on attention deficit hyperactivity disorders. A central location for ordering many of the books listed above. Call for catalog.

Center for Mental Health Services
Office of Consumer, Family, and Public Information
5600 Fishers Lane, Room 15-105
Rockville, MD 20857
(301) 443-2792
This national center, a component of the U.S. Public Health Service, provides a range of information on mental health, treatment, and support services.

Children and Adults with Attention Deficit Disorders (CH.A.D.D.)
499 NW 70th Avenue, Suite 109
Plantation, FL 33317
(305) 587-3700
A major advocate and key information source for people dealing with attention disorders. Sponsors support groups and publishes two newsletters concerning attention disorders for parents and professionals.

Council for Exceptional Children
11920 Association Drive
Reston, VA 22091
(703) 620-3660
Provides publications for educators. Can also provide referral to ERIC (Educational Resource Information Center) Clearinghouse for Handicapped and Gifted Children.

Federation of Families for Children's Mental Health
1021 Prince Street
Alexandria, VA 22314
(703) 684-7710
Provides information, support, and referrals through federation chapters throughout the country. This national parent-run organization focuses on the needs of children with broad mental health problems.

HEATH Resource Center
American Council on Education
1 Dupont Circle, Suite 800
Washington, DC 20036
(800) 544-3284
A national clearinghouse on post-high school education for people with disabilities.

Learning Disabilities Association of America
4156 Library Road
Pittsburgh, PA 15234
(412) 341-8077
Provides information and referral to state chapters, parent resources, and local support groups. Publishes news briefs and a professional journal.

National Association of Private Schools
for Exceptional Children
1522 K Street, NW, Suite 1032
Washington, DC 20005
(202) 408-3338
Provides referrals to private special education programs.

National Center for Learning Disabilities
99 Park Avenue, 6th Floor
New York, NY 10016
(212) 687-7211
Provides referrals and resources. Publishes "Their World" magazine describing true stories on ways children and adults cope with LD.

National Clearinghouse for Alcohol and Drug Information
P.O. Box 2345
Rockville, MD 20847
(800) 729-6686
Provides information on the risks of alcohol during pregnancy, and fetal alcohol syndrome.

National Information Center for Children
and Youth with Disabilities (NICHCY)
P.O. Box 1492
Washington, DC 20013
(800) 695-0285
Publishes free, fact-filled newsletters. Arranges workshops. Advises parents on the laws entitling children with disabilities to special education and other services.

Sibling Information Network
A.J. Pappanikou Center
1776 Ellington Road
South Windsor, CT 06074
(203) 648-1205
Publishes a newsletter for and about siblings of children with special needs.

Tourette Syndrome Association
42-40 Bell Boulevard
Bayside, NY 11361
(718) 224-2999
State and local chapters provide national information, advocacy, research, and support.

Credits

This booklet was written by Sharyn Neuwirth, M.Ed., an education writer and instructional designer in Silver Spring, MD.

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